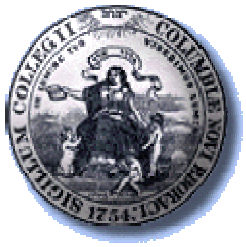

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The Wages of Sin

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Abstract

Edlund and Korn [2002] (EK) proposed that prostitutes are well paid and that the wage premium reflects foregone marriage market opportunities. However, studies of street prostitution in the U.S. have revealed only modest wages and considerable risks of disease and violence, casting doubt on EK's premise of an unexplained wage premium. In this paper, we present evidence from high-end prostitution, the so called escort market, a market that is, if not entirely safe, notably safer than street prostitution. Analyzing wage information on more than 40,000 escorts in the U.S. and Canada collected from a web site, we find strong support for EK. First, escorts in the sample earn high wages, on average $280/hour. Second, while looks decline monotonically with age, wages follow a hump-shaped pattern, with a peak in the 26-30 age bracket, which coincides with the most intensive marriage ages for women in the U.S. Third, the age-wage profile is significantly flatter, and prices are lower (5%), despite slightly better escort characteristics, in cities that rank high in terms of conferences, suggesting that servicing men in transit is associated with less stigma. Fourth, this hump in the age-wage profile is absent among escorts for whom the marriage market penalty is lower or absent: escorts who do not provide sex and transsexuals.

JEL: J12, J31, J49

The Wages of Sin *

Lena Edlund,[†] Joseph Engelberg,[‡] Christopher A. Parsons[§]

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1 Introduction

Eliot Spitzer's recent involvement with an escort cost him not only the governorship, but also some $1,000 an hour.[1] The Spitzer scandal offers a rare view of the high end of the prostitution market and showcases a glaring peculiarity: price. Prostitution is a competitive market – minimal skills are required, services are standardized, and barriers to entry and exit are nonexistent – all of which imply that prices should be dictated by the cost of supply. While the woman involved in the Spitzer scandal seemed attractive enough, neither her looks nor her resume would likely land her a similarly well-paying regular job. Thus, opportunity cost of time can hardly account

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[1] http://abcnews.go.com/m/screen?id=6302149&pid=359

for her price. Risk of arrest or disease also cannot explain the peculiarity since the rates charged by such high-end prostitutes are nearly ten times that of street-level prostitutes who face greater risk.

In a recent paper, Edlund and Korn [2002], henceforth EK, claimed that prostitutes are well paid because of forgone marriage opportunities. However, both the claim of high earnings and the proposed explanation have been criticized. There is little systematic data on wages or earnings of prostitutes. The most eye-popping numbers have been reported from developing countries where demand is in large part driven by the presence of transitory men from high income countries (for South East Asia, see Lim [1998]). For the United States, in contrast, where demand is mainly home-grown, studies of street prostitution reveal only modest earnings [Lillard et al., 1995, Levitt and Venkatesh, 2007]. Considering the fact that street prostitutes face non-negligible risks, notably arrests, STDs and violence [Potterat et al., 2004], earnings do not appear high. As for damage to marriage market value, the fact that some prostitutes marry has been taken as evidence against EK [Arunachalam and Shah, 2008].[2] Moreover, EK's focus on the marriage market as an opportunity cost of prostitution for women has been criticized as sexist and inferior to a gender neutral, stigma-based, explanation [Giusta et al., 2009].[3]

[2]This literal interpretation of EK's simplifying assumption of the prostitution/wife as a dichotomous choice (rather than as a discount on marriage market value) also ignores the possibility of inframarginal suppliers with lower opportunity cost than the marginal supplier.

[3]EK's explanation is not incompatible with stigma. In fact, EK provides a rationale

In this paper we raise our focus from the rough-and-tumble of street prostitution to the world of escorts. The U.S. escort market present several advantages for testing EK's hypothesis. First, escorts are less exposed to personal violence, disease, or arrest than are their street prostitute counterparts. This is due to a variety of factors: clients of escorts are wealthier, agencies often screen and/or protect escorts during encounters, condom use is common, and, because escorts typically contract only for "companionship," they are less subject to regulation and legal prosecution, e.g., Biggs [1988]. Second, since the bottom has essentially fallen out of the under-class marriage market in the U.S., e.g., Wilson [1987], we would not expect lost marriage opportunities to be driving prostitution prices at the low end. Escorts, on the other hand, could face substantial opportunity cost in the marriage market, having considerably better socio-economic characteristics. Third, prices are not driven by foreign sex-tourism, that is, men (and women *a priori*) are present in both the marriage and the commercial sex market. Fourth, solicitation is internet based, which reduces risk and transaction costs – and, importantly, provides the source of our data. Using a webcrawl program, we have downloaded reviews and price information on some 40,000 (mainly) US-based escorts.

The data are strongly supportive of EK. First, wages are high. On average, escorts who provide sex command some $280/hour, a wage rate that on a full time basis would place them in the top 0.5 percentile of the US earnings

for why prostitutes would be stigmatized, female prostitutes in particular.

distribution, or roughly in the top 0.05 percentile of the female earnings distribution [Kopczuk et al., 2008, table 12B]. Most likely, escorts do not work 2,000 hours per year, but a mere 20% employment would suffice to secure a position in the top quintile of the U.S. household income distribution (an income roughly at par with that of the median household whose head holds a Master's degree).[4]

Second, if, as hypothesized by EK, an escort's wage compensates her for lost marriage opportunities, then we would expect wages for female escorts to be highest when the marriage market is the thickest. Marriages are heavily concentrated in the mid-to late 20s. Median age at first marriage for women was 25.1 in 2000-2003,[5] and about two thirds of women have married by age 30 [Bramlett and Mosher, 2002].

Unconditionally, the pattern in our data is clear: wages show a clear hump-shaped pattern, peaking in the late 20s. Average hourly wages for escorts aged 18-20 providing sex to their clients are about $260, increasing to $280 for women 21-25, topping out above $298 between ages 26-30, declining slightly to $295 from 31-35, dropping further to $276 until age 40, and settling to $255 afterward (Table 1, also Figure 1, top panel). However, these unconditional results ignore potential differences in appearance, performance, and services offered that vary across age. When we add an extensive battery

[4]U.S. Census Bureau, Statistical Abstract of the United States: 2003, tables 688 and 689, 2001 year and dollars.

[5]U.S. Census Bureau, American Community Survey 2002-2003, Census Supplementary Survey 2000-2001.

of control variables for specific acts, physical characteristics, ethnicity, and city fixed effects, the relation remains. Escorts in their prime-marriage years demand the highest compensation from their clients. The premium from age 18-20 till the peak near age 30 is roughly 7%, or $18 per encounter. If an escort works 15 nights a month and sees 3 clients a night, this represents a premium of almost $10,000 annually.

Third, this hump-shape is absent among subsets of escorts for whom marriage market damage would be less important: escorts who do not provide sex and transsexuals.

Fourth, EK predicts that the wage premium charged by prostitutes should be positively related to the ability of their potential husbands to decipher their current or past occupation as sex workers. We rank U.S. cities according to the Travel Industry Association of America (TIA) and the National Business Travel Association (NBTA) list of popular conference/convention cities with the idea that conference/convention participants make for a more transient customer base. We find that the premium charged by escorts in their late 20s is reduced in cities that host multiple conferences – cities such as Dallas (1.5%) and Orlando (-4%). In contrast, escorts in cities home to comparatively fewer conferences such as Minneapolis (4.5%) or Houston (4.7%), charge higher premia during their prime marrying years.

Our results contribute to a growing body of literature in economics on the features of the prostitute market. Cunningham and Kendall [2009a] provide descriptive information on escort prices obtained from the internet.

Moffatt and Peters [2004] also obtained their data from the internet, and while they found a hump-shaped age-wage profile (with a peak at age 21), they emphasized the labor market as the opportunity cost. Another small empirical literature has focussed on condom use and associated willingness to pay (to avoid), e.g., Rao et al. [2003], Gertler et al. [2005], Robinson and Yeh [2009].

The remainder of the paper is organized as follows. The next section develop predictions for the age-wage profile if opportunity costs are driven by foregone marriage market opportunities. Section 3 describes how the data were collected and coded. Section 4 presents our results, where our focus is on the age-wage profile for various subsets of our data. We also present the results from a short email survey that we sent to email addresses culled from the web where we ask about compatibility with marriage and dating, and condom use, Section 4.2. Section 5 concludes the paper with a summary and discussion.

2 Hypothesis Development

EK focused on the level of earnings in prostitution. Their main insight is that unlike other professions, prostitution substantially reduces a woman's value on the marriage market. The associated "stigma" increases the marginal cost of selling sex commercially, and sustains high earnings. Our empirical work is motivated by applying the same reasoning *within* the population

of active escorts. That is, provided demand exists, we expect escorts with higher costs – particularly those related to marriage opportunities – to charge higher prices.

Trivially, this will be true if the market for escorting services is perfectly competitive, in which prices and marginal costs move one-to-one. We do not observe aggregate (or even city-level) demand, but several factors argue for a market that is fairly competitive, at least locally. By this, we mean that although clients may exhibit preferences for age, race, hair color, or other features, the cost of switching providers is, we think, very low (if not negative, as demand for variety would predict). To anticipate events, our data (described in Section 3) contains evidence of both. In Figure A.1, lower panel, we see that reviewers of older (younger) escorts are more likely to subsequently review an older (younger) escort, indicating at least some preference for age. Undoubtedly, the same picture would emerge were we to stratify the data on race, body shape, and a number of other characteristics. However, male clients have a strong preference for variety in terms of providers, Figure A.1, lower panel. About 60% of reviewers in our sample reviewed multiple escorts (accounting for 90% of reviews).

Such evidence suggests high degree of substitutability between escorts, reducing market power. Furthermore, minimal skills are required, services are standardized, and barriers to entry and exit are non-existent.[6] Together,

[6]The explosion of online escorting has reduced whatever entry barriers, however small, may have previously existed.

these factors suggest that within any escort market – e.g., early 20s, White, brunette, thin, located in Philadelphia – the equilibrium price will likely be close to the (marginal) escort's reservation wage.[7] Furthermore, and importantly, it suggests that the higher price observed for the 26-30 age group is driven by this demographic's facing higher opportunity cost of escorting. In case the supply curve is horizontal, this would follow trivially since the equilibrium price is independent of demand. With upward sloping supply (and thus infra-marginal suppliers), demand also plays a role for price. However, making only weak assumptions about demand – not being higher for older escorts – a demand driven explanation would be hard pressed to account for a hump-shaped age-wage profile. Thus, if (as we find) price is higher for an older age group, this is highly suggestive of this age group facing higher opportunity cost than younger escorts.

Our main proxy for marriage-related marginal cost is the escort's age. Intuitively, the dynamics of searching for husband change over a woman's life (whether she is an escort or not). We wish to identify the most "expensive" years for a woman ultimately wishing to marry. In other words, during which years in a woman's life would she require the highest premium to neither date nor maintain relationships that would lead to marriage?

In the U.S., rates of first marriage are highest in the 20s. Marriage rates

[7]Nonetheless, we do not claim that the escort market is characterized strictly by perfect competition. Monopolistic competition with differentiated goods is likely a more realistic description, but, we maintain, one in with low switching costs and consequently, little market power for any one escort.

rise through the late teens, are constant through the 20s, slow significantly in the 30s, and beyond age 45, first marriages are smaller. As for fertility, rates are the highest for the 26-30 age group[Sutton and Mathews, 2004, figure 3].[8] If the willingness to pay for marriage derives from male demand for children (through marriage, men obtain legal fatherhood – paternity and legal custody), then these high fertility years are likely the most valuable. Intuitively, earlier marriages face a higher risk of dissolution before the arrival of children, and later marriages face increasing risk of childlessness.

From this evidence, it seems quite clear that convincing a female to sit out the marriage market in her late 20s or early 30s would be particularly difficult. A woman's earlier years (e.g., around 20) are comparatively cheap, as she still possesses well over a decade of fertility, and can even afford a failed marriage before her capacity to bear children declines. Similarly, by the late 30s, the window for childbearing has (generally) past, implying a negligible opportunity cost on the marriage market. Such humped-shape marginal costs are consistent with marriage-driven outside opportunities, but are difficult to justify through the usual channels (e.g., returns to experience, etc.).

The Appendix outlines a simple theoretical search framework that would

[8]By necessity, evidence on female fecundity draws upon fertility studies. The demography and medical literature documents that female fertility begins to rapidly decline around age 30, e.g., American Society for Reproductive Medicine Practise Committee [2008]. For example, Schwartz and Mayaux [1982] examined the fertility of American wives of sterile men by quantifying how many artificial insemination attempts are required for successful conception. Prior to age 31, the probability of success of artificial insemination after 12 cycles was relatively stable at near 73%. A steep decline begins after 5, where it drops to 61%, settling to 54% after age 35. Natural population data are nearly unanimous that for practical purposes, the potential for childbearing ends near age 42.

deliver the same result.

3 Data

The main source of our data is a website where the clients of escorts review their experience. The reviews include precise detail including price, services performed and characteristics of the escort. The reviews have two components: (1) a textual review which details the experience and (2) a standardized form in which the reviewers are made to assign values and pre-specified descriptions. In each review clients are asked to assign a score (1-10) which rates the escort's appearance and a score (1-10) which rates the escort's performance. They are also asked to describe the escort's age, ethnicity, timeliness, hair color and style, breast appearance, height, photo shown before the encounter, tattoos, piercings, sexual acts performed, among a number of other dimensions. For each of these categories, users are asked to choose among a pre-specified list of options (via a drop-down menu). For example, when describing the escort's age, users can choose among 18-20, 21-25, 26-30, 31-35, 36-40, 41-45 and over 45. For each escort, the website displays a profile which presents these characteristics, the price(s) and description of the escort's service(s) and hypertext links to the history of reviews for the escort. These links provide both the numerical score for appearance and performance in each review as well as the textual description of each review.

During the period starting December 12th and ending December 17th, 2008, we employ a web-crawling program which systematically downloads the profile, pricing data and the numerical scores in each historical review. For each price, the client provides a time length which is sometimes not standardized. We read through the 1000+ unique time descriptions (e.g., "90 min," "about an hour," "30-40 minutes," etc.) and when necessary, convert each to a time in hours. For some descriptions we assign a missing value if we cannot determine the length or we determine the given length is not objective (e.g., "2 seconds – ripoff"). The result is a data set where for each escort we observe hourly wage together with personal and performance characteristics.

We then apply a set of filters to our data. First, to avoid stale reviews we only consider reviews given in the last 5 years. The years 2004-2008 account for 75.8% of all reviews. Second, we restrict ourselves to encounters that are between one and four hours. An hour is the standard time allotted for an appointment, comprising over 80% of our total observations. Meetings that last longer than four hours are very rare (less than 1%) and often involve travel and other factors that make comparison with regular engagements more difficult. Similarly, very short encounters are disproportionately associated with scams or rip-offs, during which little to no service is rendered despite payment by the client. We exclude such observations, and also those reviews where the client's numerical score assigned to performance is 1, 2 or 3, or if the escort is labeled as a "ripoff" on her profile page. Nonetheless, such

unusual observations are so few that none of our main results are affected by their inclusion.

One of the more important filters is whether or not an escort is inferred to provide sex to his or her clients. In one of the drop-down menus available to reviewers, clients can report what specific services were provided during the encounter. In approximately 85% of our observations, sex is indicated. In the balance, escorts do not provide sex (of any kind), but may offer services such as a "sensual massage."

4 Results

We start by presenting a number of summary statistics for the main sample of female escorts that provide sex to their clients, Table 1. This list is representative of the types of variables reported on the reviewing website, but is not exhaustive. In particularly, we exclude summary information on the most explicit variables, but later include them as controls in our wage regressions. From left to right, Table 1 displays a number of interesting patterns. The first variable is the escort's appearance, averaged over all clients that provide a review for him or her. As expected, average beauty strictly declines with age. Such a pattern suggests that appearance reviews are at least somewhat objective.[9]

[9]If reviewers were able to adjust each escort's beauty evaluation by her age (as they were instructed to in Daniel S. Hamermesh and Jeffrey Biddle's (1994) study on beauty and labor market outcomes), the declining pattern we observe would be absent. Unpublished personal communication with Daniel Hamermesh regarding their data confirms ratings of

The appearance of the youngest escort cohort (18-20) is rated 7.68 (out of a possible 10) on average, decreasing only slightly to 7.62 during during the early twenties.[10] Appearance then starts to decline at an increasing rate, falling to 7.51 between ages 26-30, and then to 7.32 for ages 31-35.[11] Escorts over age 40 are judged to be substantially less attractive than the their youngest counterparts, by almost one unit on a 10-point scale (p=0.000).[12] Similar patterns emerge when examining particular physical characteristics. Perhaps unsurprisingly, the "performance" of each escort is rated higher in each successive age group, except for the group aged 40 and above. Compared to those of the youngest cohort, the performances of escorts in their 30s rate roughly 3 tenths of a point higher on the 10-point scale (p=0.000). This pattern can be reconciled with selection effects over time (i.e., the best performers are most likely to remain in the profession), learning through experience, or older escorts compensating for declining appearance through increased effort. That escorts above age 36 "Kiss" their clients some 57% of the time compared to 39% for those below age 20 is indicative of such

beauty for both males and females declines with age.

[10]The ordinal options are: 1 - I was really scared; 2 ugly; 3 homely; 4 ok if you are drunk; 5 plain; 6 nice; 7 attractive; 8 really hot; 9 model material; 10 once in a lifetime.

[11]The drop in appearance may not seem large but note that sample size roughly halves between each five year age bracket. A 35 year old who is still in the escort business is there probably because, among other things, she ages well.

[12]A similar decline is observed when examining the percentiles within each age group. Extremely attractive escorts (rated as 9 or higher) are more likely to be observed in the youngest age groups, whereas the most plain (rated as 5 or below) are most common among the oldest escorts. The second effect is slightly more pronounced than the first, leading to higher dispersion in appearance as the age of the cohort increases.

substitution, and is confirmed (unreported) in a number of other more intimate dimensions. Similarly, older escorts are more likely to be punctual ("On Time"), and when they do arrive, offer a "No Rush" session to their clients.

However, the pattern with which we are most concerned is the hourly wage by age group. Perhaps contrary to intuition, Table 1 indicates that the youngest escorts, who are rated as the most attractive on average,[13] do not command the highest wages. Escorts under the age of 21 charge slightly less than $260 on average, roughly 7% less than the cohort directly older. The highest wages are earned by escorts between 26-30, who average almost $300. After that, wages fall off with age. This hump-shaped pattern accords well (qualitatively) with the pattern for marriage and fertility in the U.S. described earlier (Section 2).

4.1 Wage Regressions

The hump-shaped pattern remains when we regress the logarithm of hourly wages on a progressively larger set of covariates. Table 2 shows the results. In the first column that includes only age dummies, the same hump-shaped pattern emerges. The youngest cohort (18-20) is omitted from the specification. Hourly wages increase for the next two groups (21-25 and 26-30 respectively), then slightly decrease between ages 31 and 35, and fall substantially there-

[13]Women in their late teens, post puberty, but before bearing their first child, have the highest prospective reproductive value, which may be one reason this age group is consistently considered the most attractive by men [Buss, 1994].

after. All differences between successive age groups (e.g., between age 18-20 and 21-25, between 21-25 and 26-30, etc.) are significantly different at the two percent significance level. From peak to trough, the wage premium is between 10% and 15%, when compared to the youngest and oldest escorts respectively.

However, as the summary statistics make clear, escort age is highly correlated with a number of factors expected to influence wages, particularly appearance and performance. The second column shows that when these controls are added, the explanatory power of the regression increases substantially from under one to over 18 percent, but the hump shaped wage profile remains. The third column includes city dummies, which picks up cross-sectional differences in local client income, demographic composition, or other factors that may influence the wage. As seen, a premium of approximately 10% is observed, even with these controls.

In the fourth column, we include a large family of "attribute" controls, including hair color and length, body type (e.g., "heavy"), breast size, the presence of tattoos, piercings, and a number of more explicit descriptions (not all coefficients are presented in Table 2). As seen, this family of attributes increases the R^2 by another 9%. Furthermore, including this set of controls somewhat attenuates the wage pattern observed in the first three columns, reducing the premium for 26-30 year-old escorts from 9% to 7%. In column five, we include the full set of controls, adding "activity" fixed effects for a number of explicit sexual services rendered. Taking this column as the most

informative estimate, we see almost a perfectly symmetric hump shaped wage profile, peaking at nearly 7% in the 26-30 age bracket.

Approximately half of the sample are represented by escort agencies. One concern is that within a given agency, it is common for the hourly rate to be identical across escorts, regardless of appearance, performance, age, or other factors. Although escorts may select (or be screened) into agencies based on such criteria, wage compression within any given agency reduces the data's variability. Additionally, we do not have systematic data on the split in revenues between agencies and escorts, nor whether such splits differ across age profiles. To eliminate such concerns, the final column shows the results of the full estimation (with all controls) for the sub-sample of escorts who do not work with agencies. Escorts in this "independent" sample are slightly older on average, although all age groups are still well represented. As seen, most of the coefficients between columns five and six are similar, although the hump-shaped profile becomes even more apparent. In the subsequent analysis, we show the results when all observations are aggregated, but note here that all results are strongest for this independent set.

While the peculiar pattern of wages coinciding with the median age of first marriage is consistent with EK, it is difficult to reconcile with other alternative explanations. An upward pattern would be consistent with increasingly valuable outside opportunities, reflecting returns to experience or training that accrue over time. Similarly, an upward sloping wage profile could be justified by returns to escort-specific skills or experience, increased

pricing power as the number of competitors diminishes, or the ability of seasoned escorts to extract rents from repeat clients. On the other hand, a downward slope might be expected, particularly if appearance is the primary determinant of price, and if, despite the detail the data afford, we have not adequately controlled for looks in our regressions.[14]

4.1.1 Falsification

To check for mis-specification, we consider the wage profiles of two control samples: transsexuals (born male) and female (born) escorts who do not provide sex to their clients. Transsexuals provide a convenient comparison: while their jobs as escorts are very similar, their marriage prospects are not. According to the logic underpinning EK, if they married as husbands, they would be on the paying side, and if their gender role was that of the wife, they are clearly barren and therefore the basis for compensation would be moot.

The second group draws perhaps an even sharper comparison. These are heterosexual, female escorts with presumably similar outside employment opportunities to their female, heterosexual counterparts that do provide sex to their clients. An important difference, we believe, is that by not providing sex, these escorts avoid some (if not all) of the stigma, and therefore suffer less of a reduction in their marriage market value. In Section 4.2 below, we

[14]In unreported results, we have augmented our the specification to include higher order power of of both *performance* and *appearance*, as well as various interactions between the two. None of these alter the coefficients on the age coefficients.

return to this question.

The first column of Table 3 shows the results of the wage regressions for transsexual escorts that provide sex to their clients. Quite clearly, the hump-shaped wage pattern observed in the final two columns of Table 2 are absent here. As shown unconditionally in Figure 1, each successive age category is associated with a further reduction in hourly wage. Even young transsexuals (age 21-25) are approximately 10% cheaper than their younger adult (18-20) counterparts, with increasing wage differences increasing to 16% by age 36-40, and 22% thereafter. The difference in wage profile is highly significant from that of female escorts, when all observations are included in the same regression. The result for the transsexuals is noteworthy also for the level differences. For the peak ages, 26-30, transsexuals earn only \$190/hour, or about two thirds of the \$290/hour for female escorts (Figure 1, lower panel). This is further suggestive of transsexuals having lower opportunity cost than female escorts. Since transsexuals are reported as such by reviewers in our sample, this suggests that the transsexuals provide a window on male homosexual prostitution. Thus, both the level and the shape of the wage-age profile of transsexuals are consistent with the hypothesis of EK.

Similar evidence is presented in the second column, which shows the age-wage profile of female, heterosexual escorts that do not provide sex to their clients. Figure 1 also shows a steady decline in unconditional wages as age increases for this group, but when controls are included, no discernible pattern emerges. Similar to the transsexual regression, the (absent) age profile is

statistically different from the hump-shaped profile in the sex-escort sample, a pattern consistent with EK.

The final two columns are motivated directly by EK, which suggests a specific channel through which working as an escort or prostitute may compromise a woman's marriage prospects: stigma. Because men prefer not to marry prostitutes (current or past), such women have an incentive to lie, and thereby force their potential husbands to rely on external sources for such information. It directly follows that when a man can more easily decipher his potential bride's experience as a sex worker, she demands compensation ex-ante for lost future marriage opportunities.

The ideal test of this prediction would be to compare wages between identical escort groups, save that one works with complete anonymity. Presumably, an important ingredient of such "occupation privacy" is the transience of an escort's client base – an escort is certainly more likely to be discovered if her clients live and work where she does. Unfortunately, we do not have demographic information on clients that would allow such a test. However, as a proxy for whether an escort's clients are local, we distinguish U.S. cities by their ranking on the 2004 list of "Top 20 Cities for Convention / Conference/Seminar Travelers," published by the Travel Industry Association of America (TIA) and the National Business Travel Association (NBTA). At the top of the list are cities that, in 2004, hosted the most conferences, and presumably attracted large numbers of non-local men to the city.[15]

[15]See also Cunningham and Kendall [2009b] as examples where large conferences are a

The list is intuitive – major airline hubs (e.g., Chicago, Washington D.C., Atlanta) or cities with particularly seasonable weather (e.g., Orlando, San Diego) all rank highly. In contrast, several large cities that suffer in either dimension (e.g., Minneapolis for weather, Seattle for lack of an airline hub) ranked poorly or failed to make the list.

We split our sample of U.S. cities as close as possible to the median (11,374 observations vs. 13,024), which corresponds to 13th ranked city on the Top 20 list. That is, cities ranked 12th and higher are categorized as cities hosting "many" conferences, while those ranked 13th and lower we designate "few." The results are nearly identical if we include only cities in the Top 20 list (which account for over 85% of the observations), and spit them by above or below the median ranking.[16]

Shown in the third column of Table 3 is the regression among U.S. cities that are home to many conferences. Considering for a moment only the controls coefficients ("Agency" and below), we find evidence that the two markets are quite similar. All coefficients have the same sign except for "Real Photo" which is insignificantly negative in the third column, and many have the same statistical significance level. For example, the premium on appearance is .10 vs. .12 (many vs. few), the overweight discount is -6% vs. -8%, and the premium for breast implants is 10% vs. 10%. Even the R^2 are similar at 38% and 42% respectively.

proxy for prostitution/escort demand.

[16]Similarly, if we interact a city's position in the list by the the relevant age brackets, the same pattern emerges.

Despite this similarity in controls, the age profile is significantly different between the two groups. For the third column which shows only cities home to many conferences, we see a premium for the 26-30 age group of roughly 4%, falling to -4% by age 40. In the fourth column however, the premium is over twice as high, peaking at 10% for the the 26-30 group, settling to roughly the same discount (-4%) for the oldest escort category. Importantly, both regressions include city dummies, leaving only within-city variation to identify the effects on the remaining covariates, particularly the age brackets.[17]

The same pattern is observed in the unconditional wages, plotted in the second panel of Figure 1. Similar to the logarithmic regressions, we observe a wage hump nearly twice the size in cities where demand is likely to be local. Such cross-sectional evidence is particularly difficult to reconcile with alternatives to EK's marriage market driven stigma explanation of pay in the prostitution sector.

4.1.2 Alternative hypothesis

An alternative explanation to the hump-shaped age-wage pattern is that escorts in their late 20s have pricing power relative to younger escorts. This conjecture is unsupported by our data. First, our regression analysis controls for a large number of personal and performance characteristics that may be associated with pricing power. In particular, each escort is associated with an extensive set of characteristics including appearance, performance, demo-

[17] In unreported results, the results are unchanged use interaction terms in an aggregated sample.

graphic information, and location. In order for a market power story to hold, an escort's age would need to proxy for market power above this extensive set of control variables, most of which are strongly related to prices. Second, as evidenced in Figure A.1, clients seem largely unattached to individual escorts (which may indeed be a selling point of the escort service) – *prima facie* evidence against an explanation based on market power. Third, we find that the hump-shaped wage profile is strongest in the most competitive cities (unreported). Finally, the market power story does not predict the cross-sectional differences we find among transsexual/non-transsexual escorts and those that provide sexual/non-sexual services.

An alternative explanation to the high level of pay is that escorting is risky. That escorts are less exposed to risk than street prostitutes does not imply that escorts are safe. However, we think there are reasons to believe escorting to be reasonably safe, or at least safe enough to leave a large portion of the \$280 +/hour unexplained. First, anecdotal evidence suggest that condom use is the norm.[18] Two larger-scale studies of mortality among prostitutes identified by health or policy authorities in the U.K. and the U.S. respectively, concluded that injecting drug use rather than commercial sex was the main risk factor for contracting HIV-AIDS, Ward et al. [1999], Potterat et al. [2004]. While these two studies did document much higher mortality among the studied prostitutes, Ward et al. [1999] noted that poverty, home-

[18]Personal communication with escorts. High degree of condom use was corroborated by our email survey, see Section 4.2.

lessness, drug and alcohol use contribute to violence in their personal and professional life. Second, the escort business has traditionally been notably safer than street walking [Biggs, 1988]. Today, the use of modern technology means that encounters usually leave an electronic trail, adding another layer of protection.

Still, being alone with strangers at odd hours carry risk. For comparison, we note that taxi drivers, an occupation similar in those respects, faced a risk of homicide of 41/100,000 in 1990-92 [Castillo and Jenkins, 1994]. Given that we have some 40,000 escorts in our data set, 100,000 active escorts in the U.S. may not be an unreasonable guesstimate. Considering media's twin fascination with violence, sex and money, murder cases involving escorts would likely get media attention. Given that, we find it hard to believe that more than 41 escorts are murdered each year. With that in mind, we note that New York taxi drivers in the early 1990s earned about $17/hour [Camerer et al., 1997], and unlike escorts, they need a license.

4.2 Survey findings

We also conducted a short survey via email (questions with case counts in the Appendix). We asked four questions with multiple choice answers: Whether active, and, if not, reasons for quitting; whether work interfered with personal relationship; and condom use. We were particularly interested in perceived ability to date or maintain a relationship while working as an escort and the prevalence of condom use. The former because of EK's key assumption that

prostitution interferes with personal life (more so than other occupations); latter because condoms have been found to offer effective protects against HIV and other venereal disease – a potentially major occupational hazard.

The response rate was low (107 responses, or about 0.25 percent), and almost certainly from a select sample. Nonetheless, the responses corroborate our impression that escorting can be safe. Condom use appear common. In fact, near universal at the high end of the market. While survey responses indicated a less than 100 percent condom use, high degree of provider control was indicated, suggesting that inability to protect against HIV or other venereal diseases cannot drive wages. (High degree of provider control is also consistent with higher prevalence among higher class escorts, who are likely both wealthier and more health conscious.) Several respondents made the distinction between vaginal and oral sex, with condom use being common for the former but not in the latter.

Factors contributing to lower demand for unprotected sex in the U.S. than has been documented for developing countries may be greater health awareness of both escort and client and, for the latter, fear of paternity suits.[19]

As for whether escorting interfered with dating or ability to maintain long term relationships, the majority of the respondents said it did. While EK had stressed male jealousy as the mechanism, several respondents indicated

[19]Courts favor the needs of the child over private agreements between its parents, Pamela P. v. Frank S., 59 N.Y.2d 1 (1983).

general "intimacy fatigue." A couple of respondents explicitly said they had quit in order to strengthen their relationship. An (unexpectedly) large fraction of respondents (37/107) said that they were involved in committed relationships, but many said that this was done with some difficulty.

The survey question about condom use presumed sex (undefined), and a handful of escorts wrote back pointing out that they only provide massage, suggesting the importance of this distinction. Finally, several respondents emphasized the distinction between street-walkers and escorts.

5 Discussion

We document wages for some 40,000 escorts in the U.S. and Canada using a web-crawl program. Escorts in our sample earn who provide sex earn on average $280/hour, which on a full time basis would would place them somewhere in the top 0.05th percentile of the female earnings distribution. Moreover, we document a hump-shaped age-wage profile, peaking at ages 26-30, an age bracket that coincides with key family forming years. Both the level and the shape of the wage profile are strongly suggestive of the marriage market being an important factor driving opportunity cost for prostitutes, as suggested by Edlund and Korn [2002]. Importantly, this hump-shaped age-wage profile is absent for escorts who suffer considerably less damage to their marriage market prospects – those who do not provide sex and transsexuals – lending further support to EK. Finally, the hump shape is attenuated for

escorts who arguably are better placed to conceal a past as a prostitute: those working in cities with a more transient client base ("convention cities").

The documented wages are much higher than in other professions, notably street-prostitution. While the core tasks between street prostitution and escorting are fundamentally the same, work conditions are much worse in the former (e.g., liable to prosecution, higher risk of personal violence and disease). Escorts differ on a number of dimensions from street-prostitutes, but clearly the wage differential cannot be driven by differences in risk. Of course, if escorts had extra-ordinary talents or attributes, foregone labor market opportunities could account for the wage differential. However, they would truly need to be extraordinary, very few women earn $280 /hour. Both the number of escorts in our sample and the descriptive statistics suggest the contrary. Thus, between hazard pay, labor market opportunity cost and marriage market opportunity cost as an explanation of escort wages, only the marriage market explanation sustains scrutiny. Unlike street prostitutes, whose socio-economic characteristics confine them to a marriage market with few viable propositions, escorts may be quite ordinary, with ordinary women's marriage market potential.

To see how the numbers compute, we note that in 2006, the median married household with both spouses present had an income of close to $70,000. Assuming an earnings split of 20/50 between the wife and husband and equal consumption and savings, this implies an implicit transfer of $15,000 per year to the wife, or roughly $12,000 thousand after taxes. Integrated over 40 years,

the net present value (5% discount rate) comes to $216,000. An escort working 450 hours per year at our average wage of $280 /hour would amortize that amount in about two years (and have 1,550 hours for non-escort work). Alternatively, the escort may marry, but less well, for instance, to a husband who makes $50,000 instead of $80,000. This example was just for illustrative purposes. Clearly, marriage market returns vary substantially, as can the ability to sustain work as an escort, we presume.

As for transsexuals, we have interpreted transsexuals as similar to female escorts who do not provide sex: they provide a different service and do so at a lower cost. Travelers' tales and evidence from other animals suggest another type of transsexual escorts, male impostors. If successful, such males may obtain gifts intended for female partners in exchange for sex or reap direct reproductive rewards by obtaining access to harems, e.g., [Trivers, 1985, Chapter 15]. However, in our data, the fact that the reviewer classifies the escort as a transsexual means that our sample of transsexuals cannot belong to the second category of impostors.

Finally, we note that the prevalence of pictures on escort and/or agency websites suggests that the thousand words describing an escorts age, overall appearance, or even body descriptions may not be sufficient statistics for a visual impression. Importantly however, pictures only rarely include close-ups of the escorts face, suggesting a desire to preserve anonymity.

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Appendix

A Simple Search Model with Time-Varying Arrival Rate of Proposals

Envision a multi-period game in which escorts could marry, but would have to give up escorting to do so (that is, we maintain the assumption that, at some level, prostitution and marriage are incompatible). Furthermore, assume escorts face a finite pool of potential spouses, who randomly propose to them. If the marriage proposal is accepted, then both the escort and husband exit their respective pools. Finally, assume that men are heterogeneous with

respect to, for simplicity, income. Each period, the escort keeps escorting if her earnings are higher than her best marriage proposal (measured by the man's income).

For now, let us assume that escorts are homogenous. It is straightforward to see that:

1. The higher the income of the proposing man, the higher the opportunity cost of turning him down.

2. The higher the arrival rate of proposals per time period, the higher the expected opportunity cost of escorting.

3. The quality of the bachelor pool declines each period, and more so following high proposal rates.

Now, relaxing the homogeneity assumption, consider the wage an escort would charge as she progresses through the game.

Let the ages a woman can be active on the marriage and the escort market coincide and be divided into three periods, where proposal rates are high in the middle period 2, and low in periods 1 and 3. Unequivocally, the opportunity cost of escorting in period 3 will be lower than in period 2 because of the lower arrival rate and the lower quality of the bachelor pool. For period 1, the opportunity cost is lower than in period 2 as long as period 1 proposal rates are sufficiently low. (For high enough period 1 proposal rates, the expected period 2 proposal values could be lower than period 1's because of the deterioration of the bachelor pool).

Survey

Bellow are the four questions with case counts.

1. Do you still provide escort or companionship services?

   a 83 Yes, Im still active.

   b 24 No, Im no longer active.

2. If you are no longer active, what led you to change professions? (Indicate any that apply.)

   a 7 A relationship.

   b 3 Children or other family responsibilities.

   c 2 Better or different job.

   d 14 Other (please feel free to specify)

3. Did or do your find that your escort or companionship work affects your love life?

   a 26 Yes, I can't/could't date much while working.

   b 21 Somewhat, although as an escort, you date less.

   c 8 No, I still could date as much as I did before.

   d 39 Not applicable. I could stay involved in a committed relationship.

4. In your opinion, how common is unsafe sex in the escort market?

a 45 No, condoms are always used.

b 37 Very rarely.

c 14 Sometimes, depends on the clients preferences.

d 9 Common.

Table 1. Summary Statistics by Age

Table 1 presents a number of summary statistics for characteristics, services and pricing of female escorts that provide sex to their clients. Information is reported by clients. *Average Appearance* is the mean appearance (scored 1-10 by each client), averaged across all clients that submitted a review about a specific escort. *Average Performance* is formed in a similar fashion, and is also reported on a 1-10 scale. *Heavy* corresponds one of three classifications clients could use to describe the escort's "build," including "baby fat," "flabby," or "heavy." *Piercings* corresponds to having piercings other than on the ears. *Tattoos* takes a value of one if the client reported the presence of at least one visible tattoo. Escorts are classified as using an *Agency* if the client reports using an intermediary to schedule the appointment.

AGE	18 - 20 years old					21 - 25 years old					26 - 30 years old					31 - 35 years old					36 - 40 years old					Over 40 years old				
(# of escorts)	(4,190)					(16,576)					(8,864)					(3,817)					(1,696)					(1,142)				
	Mean	Std	50th	10th	90th	Mean	Std	50th	10th	90th	Mean	Std	50th	10th	90th	Mean	Std	50th	10th	90th	Mean	Std	50th	10th	90th	Mean	Std	50th	10th	90th
Appearance	7.68	0.96	7.96	6.50	9.00	7.62	0.97	7.75	6.50	9.00	7.51	1.06	7.56	6.00	9.00	7.32	1.08	7.31	6.00	8.67	7.09	1.10	7.00	5.75	8.32	6.80	1.16	7.00	5.00	8.00
Performance	7.19	1.16	7.00	5.80	8.75	7.31	1.15	7.24	6.00	9.00	7.51	1.20	7.66	6.00	9.00	7.64	1.23	8.00	6.00	9.00	7.66	1.24	8.00	6.00	9.00	7.56	1.27	7.87	6.00	9.00
Price	259	115	250	160	350	280	150	250	167	400	298	187	250	167	440	295	185	250	160	400	276	151	250	160	400	255	154	225	150	350
Log Price	5.49	0.33	5.52	5.08	5.86	5.55	0.37	5.52	5.12	5.99	5.60	0.41	5.52	5.12	6.09	5.58	0.43	5.52	5.08	5.99	5.53	0.41	5.52	5.08	5.99	5.44	0.42	5.42	5.01	5.86
Ethnicity	Latina	Blk	White	Asn	Othr	Latina	Blk	White	Asn	Othr	Latina	Blk	White	Asn	Othr	Latina	Blk	White	Asn	Othr	Latina	Blk	White	Asn	Othr	Latina	Blk	White	Asn	Othr
	13%	16%	53%	9%	9%	13%	13%	44%	20%	10%	12%	8%	53%	16%	11%	8%	4%	70%	10%	8%	7%	2%	77%	5%	9%	4%	1%	85%	2%	8%
Heavy	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	13%		87%			13%		87%			16%		84%			21%		79%			22%		78%			29%		71%		
Agency	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	50%		50%			54%		46%			46%		54%			35%		65%			27%		73%			15%		85%		
Piercings	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	57%		43%			50%		50%			46%		54%			44%		56%			39%		61%			34%		66%		
Real Photo	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	93%		7%			90%		10%			88%		12%			89%		11%			89%		11%			90%		10%		
Tattoos	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	46%		54%			42%		58%			39%		61%			37%		63%			31%		69%			27%		73%		
Smokes	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	31%		69%			27%		73%			28%		72%			32%		68%			35%		65%			31%		69%		
Breast Implants	Yes		No			Yes		No			Yes		No			Yes		No			Yes		No			Yes		No		
	3%		97%			13%		87%			24%		76%			26%		74%			24%		76%			18%		82%		

Table 2. Female Escorts Providing Sex: Determinants of Wage

Table 2 presents the results of linear regressions of *log(hourly wage)* as a function of escort characteristics, services, and performance. Column 1 includes only dummy variables corresponding to different age ranges. The second column includes controls for *Average appearance* and *Average performance*, and the third column includes city fixed effects for every U.S. and Canadian city in our samples. In the fourth column, we include "attribute" controls beyond *Average appearance*, and augment these with a more intimate set of "activity" controls in the fifth column. The final column shows the results when we restrict our analysis to include only "independent" escorts, who do not work with an *Agency*. Robust standard errors clustered by city are in parentheses. *, **, *** represent significance at the 10%, 5% and 1% levels.

	Dependent Variable: Log(Price per hour)					
	Full Sample	Full Sample	Full Sample	Full Sample	Full Sample	Independents Only
Average Appearance		0.142***	0.136***	0.108***	0.109***	0.122***
		(0.00261)	(0.00248)	(0.00223)	(0.00248)	(0.00341)
Average Performance		0.0235***	0.0305***	0.0264***	0.00769***	0.00962***
		(0.00212)	(0.00204)	(0.00183)	(0.00237)	(0.00339)
AGE: 21 - 25	0.0566***	0.0627***	0.0412***	0.0443***	0.0462***	0.0583***
	(0.00585)	(0.00563)	(0.00541)	(0.00561)	(0.00511)	(0.00746)
AGE: 26 - 30	0.102***	0.119***	0.0969***	0.0691***	0.0681***	0.0798***
	(0.00671)	(0.00636)	(0.00610)	(0.00625)	(0.00585)	(0.00834)
AGE: 31 - 35	0.0844***	0.126***	0.114***	0.0562***	0.0539***	0.0536***
	(0.00857)	(0.00795)	(0.00763)	(0.00756)	(0.00735)	(0.00974)
AGE: 36 - 40	0.0385***	0.111***	0.0954***	0.0223**	0.0218**	0.0182
	(0.0111)	(0.0103)	(0.0100)	(0.00965)	(0.00967)	(0.0117)
AGE: Over 40	-0.0545***	0.0623***	0.0493***	-0.0291***	-0.0220*	-0.0148
	(0.0133)	(0.0122)	(0.0118)	(0.0112)	(0.0115)	(0.0134)
Agency				0.0252***	0.0341***	
				(0.00372)	(0.00371)	
Smoking				-0.0433***	-0.0479***	-0.0550***
				(0.00384)	(0.00378)	(0.00527)
Real Photo				0.0139**	0.0157***	0.00981
				(0.00566)	(0.00560)	(0.00870)
Heavy				-0.0600***	-0.0613***	-0.0676***
				(0.00522)	(0.00516)	(0.00656)
Breast Size: C to D				0.00340	0.00413	0.00684
				(0.00388)	(0.00364)	(0.00530)
Breast Size: DD+				0.0294***	0.0254***	0.0165**
				(0.00648)	(0.00683)	(0.00833)
Breast Implants				0.109***	0.108***	0.112***
				(0.00504)	(0.00525)	(0.00708)
Piercings				-0.00584*	-0.00802**	-0.0176***
				(0.00348)	(0.00341)	(0.00472)
Tattoos				-0.0100***	-0.0144***	-0.0238***
				(0.00361)	(0.00355)	(0.00482)
City Fixed Effects	NO	NO	YES	YES	YES	YES
Attribute Fixed Effects	NO	NO	NO	YES	YES	YES
Activity Fixed Effects	NO	NO	NO	NO	YES	YES
Observations	36278	36278	36278	36278	36268	19121
Adjusted R^2	0.009	0.182	0.251	0.335	0.373	0.387

Table 3. Age/Wage Profile Among Control Groups

Table 3 shows linear regressions of log(hourly wage) for two comparison samples: Transexuals (born males) in the first column, and female escorts that do not provide sex to their clients (No Sex). The third and fourth column shows the results of wage regressions for sample of female escorts providing sex to their clients (final columns of Table 2), broken down by the number of conferences hosted by the city. This list was obtained from the National Business Travel Association's (NBTA) 2004 survey, "Business and Convention Travelers Report." Robust standard errors clustered by city are in parentheses. *, **, *** represent significance at the 10%, 5% and 1% levels.

	Dependent Variable: Log(Price per hour)			
	Transsexuals	No Sex	Cities with Many Conferences	Cities with Few Conferences
Average Appearance	0.0604***	0.0820***	0.105***	0.123***
	(0.0100)	(0.00583)	(0.00439)	(0.00452)
Average Performance	0.0101	-0.0141**	0.00234	0.0165***
	(0.0112)	(0.00677)	(0.00440)	(0.00426)
AGE: 21 - 25	-0.0913**	0.0127	0.0303***	0.0652***
	(0.0428)	(0.0221)	(0.00911)	(0.0101)
AGE: 26 - 30	-0.116***	0.00193	0.0402***	0.0999***
	(0.0438)	(0.0227)	(0.0105)	(0.0111)
AGE: 31 - 35	-0.126**	-0.00773	0.0273**	0.0782***
	(0.0533)	(0.0248)	(0.0124)	(0.0140)
AGE: 36 - 40	-0.159**	-0.0229	0.00641	0.0344*
	(0.0631)	(0.0275)	(0.0159)	(0.0195)
AGE: Over 40	-0.217**	-0.0188	-0.0402*	-0.0357*
	(0.0977)	(0.0294)	(0.0213)	(0.0199)
Agency	0.00361	0.0124	0.0762***	0.0352***
	(0.0261)	(0.0105)	(0.00662)	(0.00667)
Smoking	-0.0194	-0.0118	-0.0434***	-0.0647***
	(0.0192)	(0.0134)	(0.00703)	(0.00670)
Real Photo	-0.0396	0.192***	-0.0123	0.0235***
	(0.0395)	(0.0132)	(0.0112)	(0.00886)
Heavy	-0.0293	-0.00647	-0.0607***	-0.0814***
	(0.0251)	(0.0139)	(0.00928)	(0.00939)
Breast Size: C to D	0.104***	0.00355	0.000344	0.00380
	(0.0220)	(0.0103)	(0.00667)	(0.00642)
Breast Size: DD+	0.137***	0.0157	-0.000204	0.0458***
	(0.0345)	(0.0183)	(0.0117)	(0.0120)
Breast Implants	0.0200	0.0658***	0.0997***	0.103***
	(0.0206)	(0.0163)	(0.00913)	(0.00899)
Piercings	-0.0378**	-0.0191**	-0.00317	-0.00606
	(0.0165)	(0.00968)	(0.00608)	(0.00615)
Tattoos	0.00998	0.0101	-0.0208***	-0.0117*
	(0.0172)	(0.0106)	(0.00640)	(0.00650)
City Fixed Effects	YES	YES	YES	YES
Attribute Fixed Effects	YES	YES	YES	YES
Activity Fixed Effects	YES	YES	YES	YES
Observations	1509	6250	11374	13024
Adjusted R^2	0.210	0.412	0.375	0.424

Figure 1. Age/Wage Profiles

The top figure plots the mean hourly wage by age group among three groups: escorts who provide sex to their clients, escorts who do not (e.g. massage only) and escorts who are transsexuals. The bottom figure plots the mean hourly wage among escorts who have sex but are located in cities with many (few) conferences. Conference cities are taken from the National Business Travel Association's (NBTA) 2004 survey, "Business and Convention Travelers Report."

FIGURE A

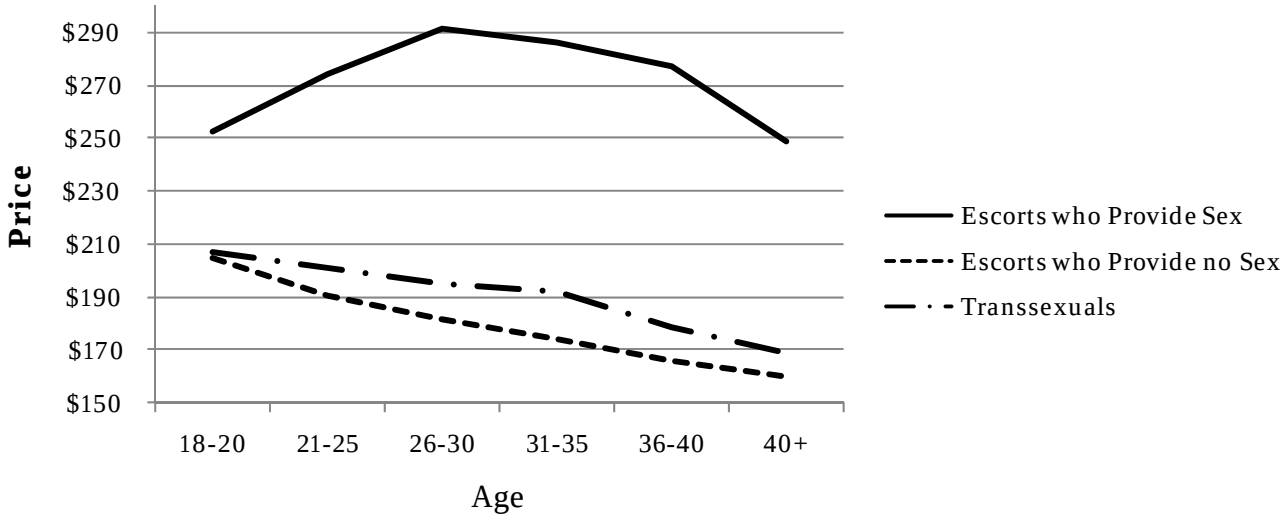


FIGURE B

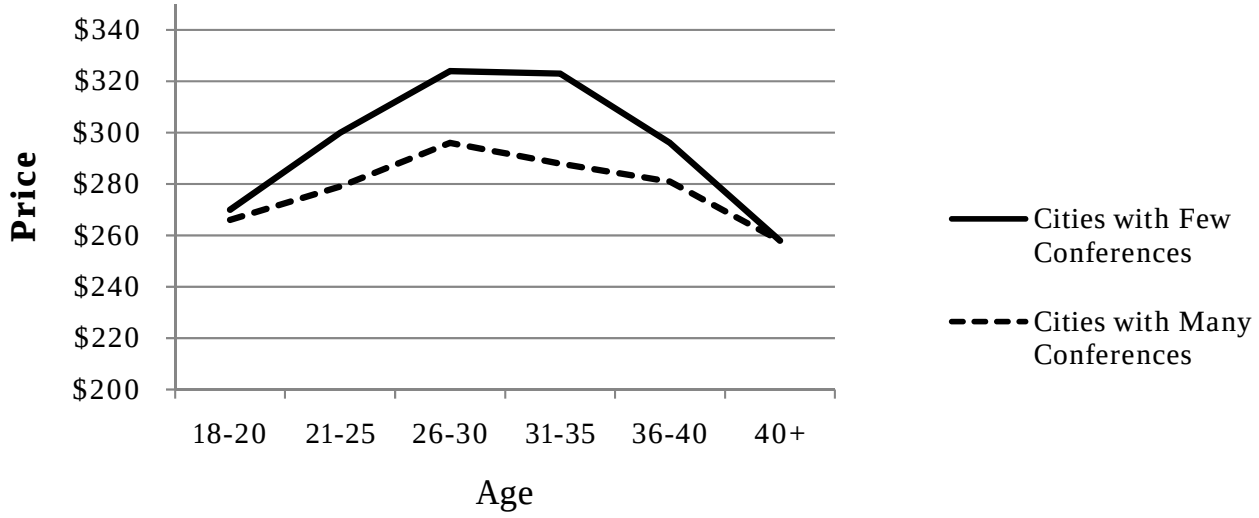
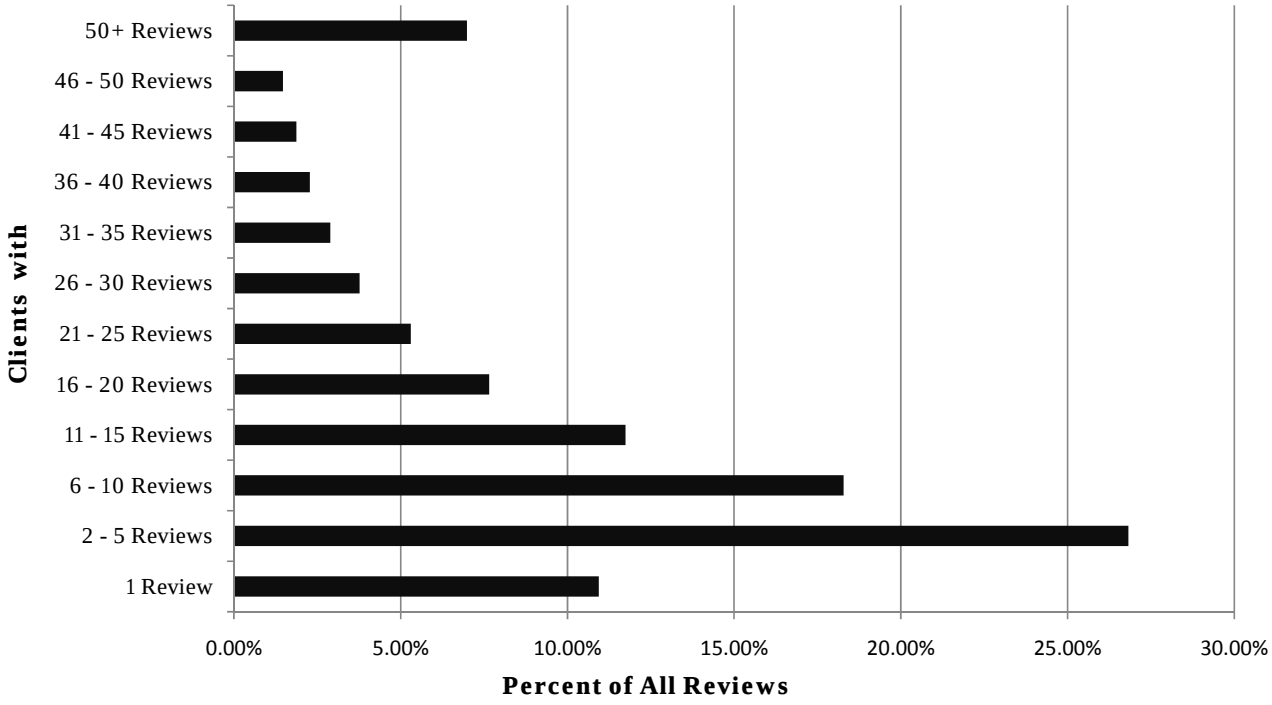


Figure A.1 Client Preferences

The top figure plots the distribution of reviews by reviewer/client type. Reviewer type is determined by the total number of reviews we observe given by each client. The bottom figure plots conditional probabilities for reviewers that review more than one escort. Given the age of the current escort reviewed, it plots the probability of observing escorts in each age group.



Next Review

This Review: Age of Escort	18 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	Over 45
18 - 20	**16.3%**	43.7%	23.4%	9.3%	4.5%	2.0%	0.7%
21 - 25	9.1%	**44.5%**	27.2%	10.8%	5.0%	2.3%	1.0%
26 - 30	6.6%	36.4%	**30.4%**	14.5%	7.0%	3.4%	1.6%
31 - 35	5.4%	29.6%	29.2%	**18.0%**	9.8%	5.5%	2.5%
36 - 40	4.6%	25.9%	27.2%	18.3%	**13.0%**	7.3%	3.8%
41 - 45	4.1%	22.6%	25.0%	18.7%	14.1%	**9.7%**	5.8%
Over 45	3.4%	19.3%	23.1%	18.6%	15.7%	12.0%	**8.0%**